# ATLAS
# OF
# FIRST-AID TREATMENT

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*Bernard Myers*

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BY

BERNARD MYERS
M.D., C.M., M.R.C.S., Etc.
LATE LECTURER AND SURGEON TO ST. JOHN AMBULANCE ASSOCIATION
AUTHOR OF "HOME NURSING," "CARE OF CHILDREN"

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~~1916~~

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1911

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TO

LT.-GEN. SIR R. S. S. BADEN-POWELL,

K.C.B.,

IN RECOGNITION OF HIS NATIONAL SERVICE

IN FOUNDING

THE BOY SCOUTS,

WHO ARE

EVER READY TO RENDER FIRST AID TO THE INJURED,

THIS BOOK IS DEDICATED,

BY PERMISSION.

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# PREFACE

WHEN Messrs. Baillière, Tindall and Cox asked me to write the text to the beautifully-executed plates contained in this book, it naturally gave me great pleasure to carry out this task, for the reason that a fairly considerable experience of first aid in London (where on occasions 400 cases have been treated in three hours by a surgeon, assisted by twelve ambulance helpers) has convinced me that the best way to teach this important subject is by means of lifelike representations of the conditions and subjects herein mentioned.

These plates will answer, I believe, a long-felt want amongst the thousands of men and women of to-day who are altruistic enough to feel that the trouble of acquiring a sufficient knowledge of how to render first aid to an injured person is more than repaid upon the first occasion when their services are required.

This book has been arranged with the object of presenting a reliable, concise, and simple text, free from irrelevant matter, which all of us who have given numerous ambulance lectures and conducted examinations know to be of the first importance.

Only such signs and symptoms are mentioned as experience teaches us are essential. The main thing, after quickly ascertaining the nature of an accident, is to "treat it."

If this "vade-mecum" of first-aid treatment fulfils our desires, the publishers and myself will feel that we have not taken this trouble in vain.

B. M.

LONDON, N.W.,
*February*, 1911.

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# ATLAS OF FIRST-AID TREATMENT

## THE TRIANGULAR BANDAGE
(*Plate I., Fig.* 1).

ALL those who desire to be efficient in the treatment of accidents or injuries must qualify themselves by becoming familiar with the use of such appliances as are deemed useful in the practical application of first aid.

Of such importance is the triangular bandage in first aid that a thorough knowledge of the method of using it is necessary. By its means we can bandage any part of the body and apply a dressing or poultice to the part injured. We can also support the injured arm and secure splints in position, its great merits being that it can be quickly applied, and also that in one form or another it is applicable to any damaged part.

When not in use, the bandage occupies very little space if it be first folded as the narrow bandage, the ends brought to the centre, and then the bandage doubled over twice.

Now, although we have mentioned the broad and narrow bandages only, because one form or the other is applicable to most cases of injury, it must be borne

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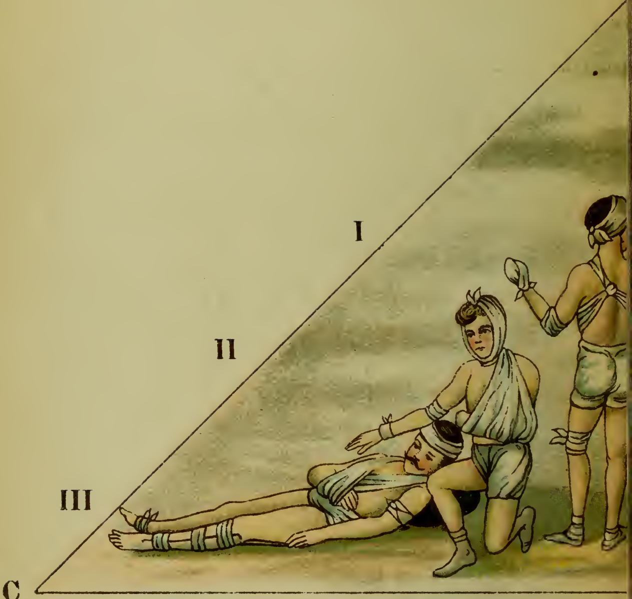


**Fig. I. THE TRIANGULAR BANDAGE.**

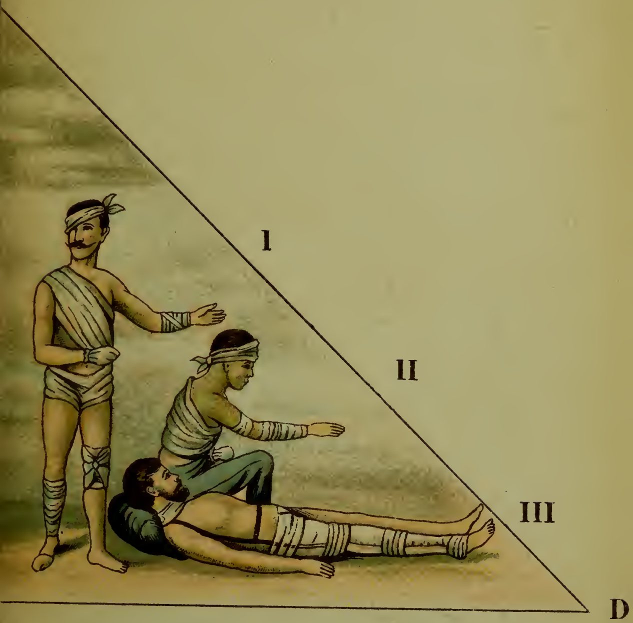
This is made by cutting some clean linen or cal
triangles result.

Each triangular bandage has an apex A, a base
**Large Arm Sling.**

To make a **Broad Bandage:**—Fold the bandag
this divides the bandage into two at the line I—I;
B. and the broad bandage or **Small Arm Sling** is f

To make a **Narrow Bandage:**—Fold the broa
and the narrow bandage is made, which extends fr

I.



0 inches square) in such a manner that two equal nd two ends C and D: in this form it represents the

hat the apex is placed exactly upon the point B; double it over again so that the line I—I is upon , which extends from the line II—II to B.

dage into two so that the line II—II is upon B, line III—III to B.

in mind that a particular case may require a bandage of intermediate size between these two. With a little practice any size can readily be made.

Furthermore, where a *short* bandage is required, fold over the two ends so that they meet at the centre of the base, and then proceed to make the broad or narrow bandage.

A very useful bandage is made if the triangular bandage be cut again into two equal triangles by an incision from the apex to the centre of the base. This size is convenient in the numerous cases where the ordinary bandage is rather too large for the part (see Plate II., Figs. 2 and 3).

Always tie the ends of the bandage by a surgeon's knot, thus: Hold one end of the bandage in the left hand and the other end in the right, pass the left end in front of the right, and twist one end around the other in the usual method of making a knot; next pass the left hand behind the right, and finish the knot. If this method be followed out, the possibility of making a "granny" knot is precluded.

Where a safety-pin is employed to secure the apex of the bandage, care is necessary to see that the pin bears no weight.

In case of urgency, where no triangular (or roller) bandage is at hand, handkerchiefs, neckties, braces, or a slip of calico, etc., can be utilized as a substitute.

Generally speaking, it is usual to apply the narrow bandage to wounds of the side of the head, back of the head, forehead, eye, cheek, ear, lower jaw, upper limbs (from shoulder to wrist), and lower limbs (from hip to ankle). The hand, foot, chest, shoulder, hip, knee, and elbow, need special bandages.

The centre of the bandage is applied to the dressing, the ends being brought around the part and tied over the dressing.

## TO APPLY A DRESSING TO THE FOREHEAD (*Plate II., Fig.* 2).

The centre of the short, narrow bandage is placed over the dressing, and the bandage carried around the head, above the ears, to the back of the head, where it is pinned or tied. If there is hæmorrhage from the forehead the ordinary bandage would be used, the ends being brought round to the back of the head, crossed, then carried forward and tied over the centre of bandage—*i.e.*, where the dressing was applied to the hæmorrhage. The object of this is to exert as much pressure as possible on the bleeding vessels. At the same time, it must always be borne in mind that bandages applied too tightly in this area give rise to headache, so discretion must always be used. Thus, if the hæmorrhage be such that a rather tight bandage is essential, then a possible headache must be put up with until a surgeon sees the case.

## TO BANDAGE THE EYE.

Take the left eye, for example. Place the centre of a short narrow bandage obliquely over the dressing on the left eye, so that one end can be directed below the left ear, and the other end over the forehead and above the right ear, the ends being pinned at the back of the head.

## TO BANDAGE THE WHOLE SCALP (*Plate II., Fig.* 4).

Fold a hem 1½ inches wide at the base, and place it on the forehead (the middle of the fold above the

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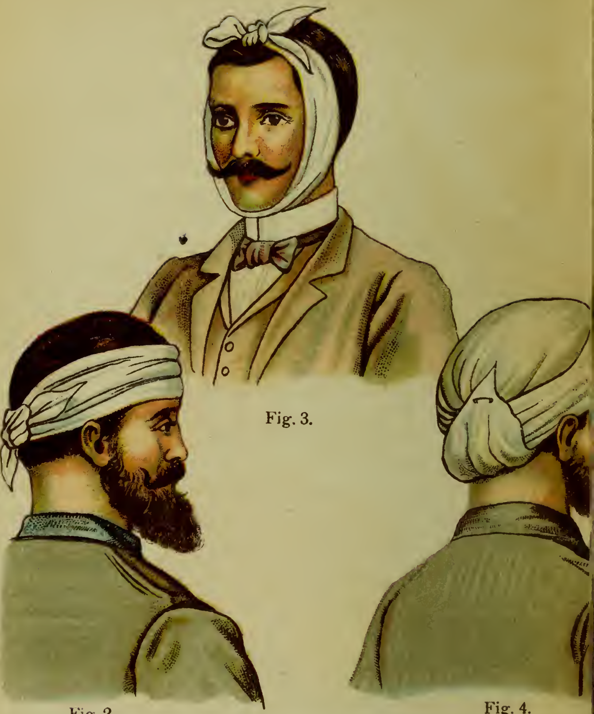

Fig. 3.

Fig. 2.

Fig. 4.

## THE USE OF THE TRIANGULAR BAN

Fig. 2. For applying a dressing to the fore-head.
Fig. 3. For applying pressure to the scalp (as in blee
Fig. 4. For applying a dressing to the whole scalp.
Fig. 5. For applying a dressing or poultice to the sh
Fig. 6. A special four-tailed head bandage for applyi

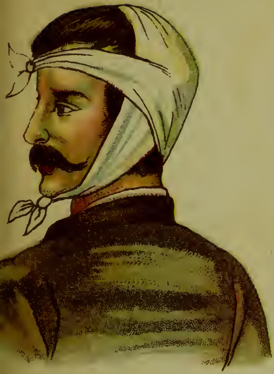

Fig. 6.

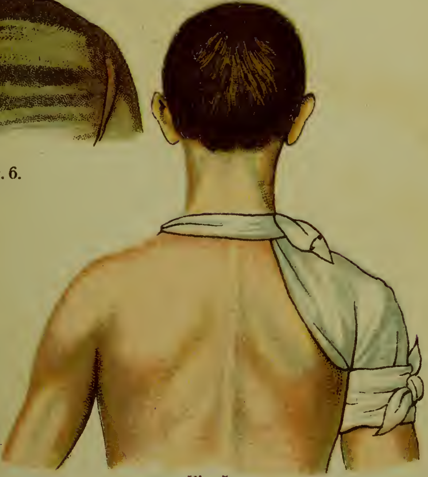

Fig. 5.

## AND A SPECIAL HEAD BANDAGE.

or a dressing to the ears or beneath the lower jaw.

dressing to the back of the scalp.

nose) immediately above the eyebrows. Bring the apex of the bandage over the scalp, and let it hang down the back. The ends are brought around the head exactly above, but not including, the ears, crossed behind, and then brought forward again, and tied in the centre of the forehead. The apex is now pulled down tightly and finally brought up on the scalp, where it is secured to the bandage with a safety-pin.

## TO APPLY A FOUR-TAILED HEAD BANDAGE (*Plate II., Fig.* 6).

Such a bandage is of obvious use when one desires to apply a dressing to the back of the head and to leave the front half of the head uncovered by bandage. The front of the bandage is first adjusted and its ends tied under the chin. Then the back half of the bandage is made even, pulled tight, and the two ends tied on the forehead. This bandage is only used occasionally.

## TO BANDAGE THE SHOULDER (*Plate II., Fig.* 5).

The centre of the bandage is placed on the shoulder in such a manner that the apex points up to the side of the neck; a hem is folded on the base, and the ends are carried around the middle of the upper arm and tied. Now one end of a broad bandage is put on the apex of the first bandage, the arm being slung by supporting the wrist, part of the forearm and hand, by the broad bandage, the other end of which is brought over the sound shoulder behind the neck to the first end, where they are tied at the side of the neck. The apex of the first bandage is now turned down, drawn tight, and pinned.

## TO BANDAGE THE EXTENDED HAND (*Plate III.*, *Figs.* 7, 8, 9).

Fold over the base of the bandage in order to make a narrow hem, and spread out the rest of the bandage. Place the wrist on the hem with the fingers pointing towards the apex ; turn over the apex so that it points up the back of the forearm ; bring the ends around the wrist, on the back of which they are tied. The apex is now pulled tight, turned over the ends, and pinned.

## TO BANDAGE THE FOOT (*Plate V.*, *Fig.* 12).

Open the triangular bandage, place the foot as nearly as possible on the centre of it, with the toes pointing towards the apex. Bring the apex over the instep to the front of the ankle, cross the two ends over the instep, carry the ends around the foot, and tie over the front of the instep. Now pull the apex just tight, turn it back, and secure it by a pin to the bandage on the instep.

## TO BANDAGE THE ELBOW (*Plate III.*, *Fig.* 9).

The base of the bandage is folded to make a hem of from 1 to 2 inches wide. The middle of the base is placed on the back of the forearm some 3 inches below the elbow-joint, while the apex points along the back of the upper arm towards the shoulder. The ends are brought forward over the forearm and crossed in front of the elbow, then carried to the back of the upper arm, on the outer aspect of which they are tied. The apex is brought down and pinned to the bandage.

## TO BANDAGE THE KNEE (*Plate V.*, *Fig.* 12).

The base of the bandage is folded over to make a hem 2 inches wide. This is placed 2 inches below the

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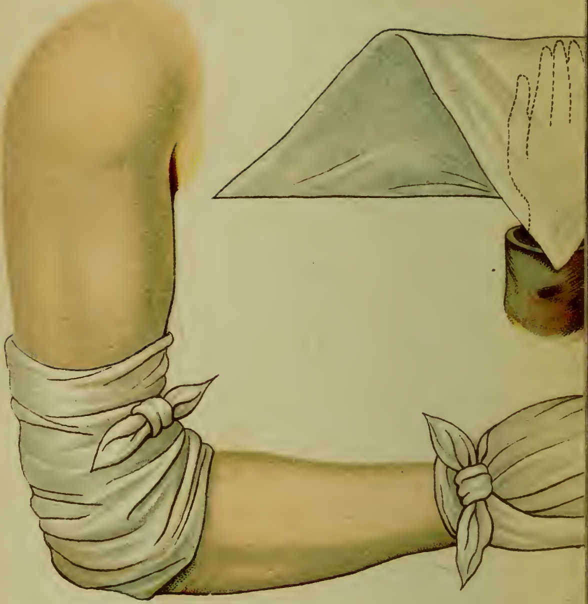

Fig. 9.

## THE TRIANGULAR B

Figs. 7. 8. Demonstration of method of applying the bar

Fig. 9. Shows the hand bandage in the third or comp
elbow is also illustrated.

I.

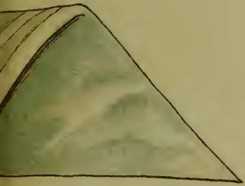

Fig. 7.

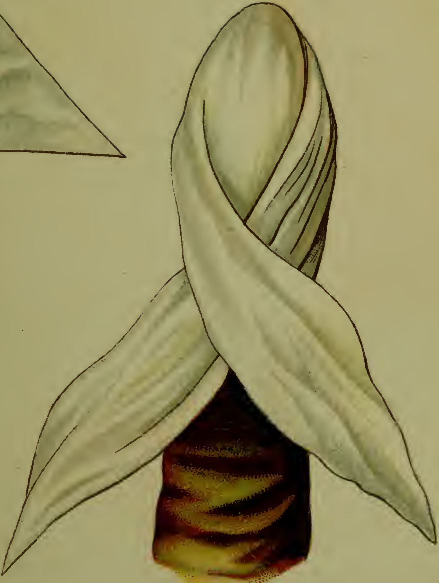

Fig. 8.

## GE (CONTINUED).

to the hand; the first and second stages are shown.
stage. The method of using the bandage for the

knee, the apex pointing along the thigh towards the hip. The ends are brought to the back of the knee, crossed, and brought forward again over the thigh some 2 or 3 inches above the knee-joint and tied. The apex is turned downwards and pinned to the bandage.

NOTE.—There are several ways of bandaging the knee, but this method is the best.

## TO BANDAGE THE HIP.

A narrow bandage is tied round the body just above the haunch-bones, the knot being placed on the injured side, for obvious reasons. Take a second bandage and fold a hem 2 inches wide (for an adult) along the base. Place the centre of this bandage over the dressing, and bring the ends round the thigh, on the outer side of which they are tied. The apex is carried up under the first bandage, pulled tight, turned down over the knot, and pinned.

## TO BANDAGE THE CHEST

(*Plate V.*, *Figs.* 13*a* *and* 13*b*).

The middle of the triangular bandage is placed over the dressing on the injured part. The apex is put over the shoulder (of the injured side), and the ends are brought around the waist and tied at the back. The apex is next drawn over the shoulder and tied to one of the ends.

## TO BANDAGE THE BACK.

The method of bandaging the back is precisely the same as for the chest, but instead of beginning the bandage in front, it is begun at the back and tied in front.

## TO APPLY THE LARGE ARM-SLING
(*Plate IV., Figs.* 10 *and* 11).

Hold one end of the triangular bandage over the sound shoulder. Draw up the bandage sufficiently to allow the end to go round the back of the neck to the injured shoulder, and let the rest of the bandage fall in front of the patient. See that the apex projects under and beyond the injured arm. Bring the forearm on the injured side across the body so that it forms a right angle with the upper arm, very slightly below an imaginary line between the apex and the centre of the base. The lower end of the bandage is now brought over the forearm, and carried up to the end on the injured shoulder, where it is tied. It is necessary to see, before tying the two ends together, that the forearm and hand are correctly supported by the bandage. The apex is finally pulled gently round to the front of the bandage, and secured by a large or two medium safety-pins. The large arm-sling supports the weight of the whole arm, and also gives rest to the shoulder.

## TO APPLY THE SMALL ARM-SLING
(*see Plate I.*).

Make a broad bandage. Hold one end on the sound shoulder, and allow the rest of the bandage to fall in front of the chest. Pass the upper end around the back of the neck, and place it on the injured shoulder. Draw up the forearm on the injured side across the patient to form a right angle with the upper arm. Support the wrist and part of the hand and forearm by the bandage, and tie the lower to the upper end on the injured side of the neck. This sling is occasionally used instead of the large one, but its special use is for fracture of the bone of the upper arm.

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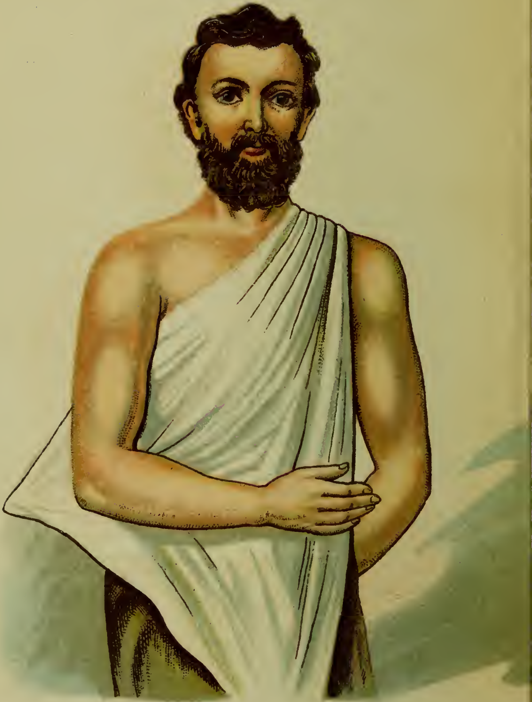

Fig 10.

## THE TRIANGULAR BA

Fig. 10. The method of app

Fig. 11. The Large Arm-sli

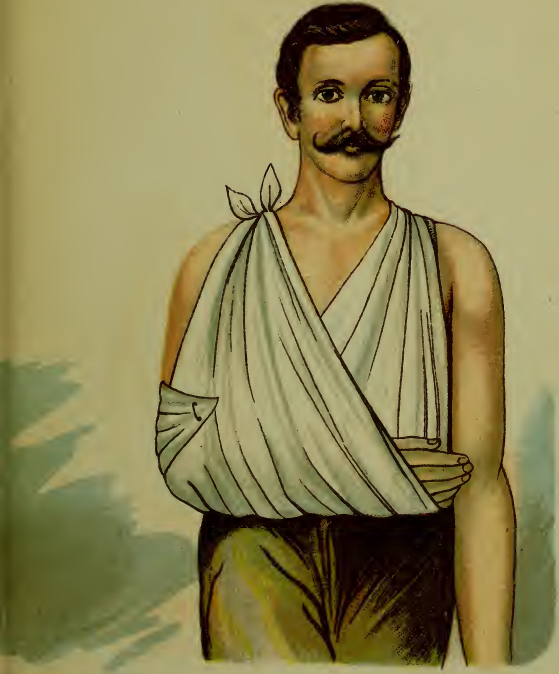

Fig. 11.

GE (CONTINUED).

the Large Arm-sling.

mpleted.

**IMPROVISED SLINGS** may be used when the real slings are not available. Amongst such may be mentioned passing the hand inside the buttoned-up coat, pinning the tail to the front of the coat, and securing the sleeve to the clothing by safety-pins.

## THE ROLLER BANDAGE.

This bandage is capable of being much more closely adjusted to the part than the triangular bandage. It is used to apply dressings, splints, etc., and to support and keep the injured part at rest. Frequently, also, it is utilized to check hæmorrhage.

The roller bandage can be made at home from a piece of calico 6 yards long and about 1 yard in width. The selvedges are removed and the calico marked with scissors in order to make bandages of 1, 2½, 3, and 4 inches wide; the calico is torn in the usual way. From three pieces of calico of the size mentioned the following bandages can be made:

Ten bandages 1 inch wide, suitable for fingers and toes.

Sixteen bandages 2½ inches wide, suitable for head and upper limbs.

Ten bandages 3 inches wide, suitable for lower limbs.

Seven bandages 4 inches wide, suitable for trunk.

If desired, some 1½-inch bandages could also be made. Each bandage is 6 yards long. The bandages can be rolled up by hand or with a bandage roller. When not in use, the bandage is kept tight by a small pin. Most people buy them ready-made. Various materials, such as linen and web, are sometimes used instead of calico. When partly unrolled, we distinguish in the bandage a tail or free end and a head or rolled-up part.

## RULES FOR BANDAGING.

I. See that the bandage is rolled up tightly before beginning.

II. Place the outer side of the tail (free end) of the bandage against the skin. This is for convenience.

III. Fix the bandage by taking two turns around the limb, one exactly over the other.

IV. Only 3 or 4 inches of the bandage should be unrolled at a time.

V. Bandage from below upwards and from within outwards over the front of the limb.

VI. Use equal pressure with all turns.

VII. Make each turn of the bandage overlap two-thirds of its predecessor.

VIII. Endeavour to keep all the margins parallel and to get the crossings and reversings in one line towards the outer part of the limb.

IX. Finally, end the bandage by securing it firmly with a safety-pin, which should be placed at right angles to the long axis of the bandage. If no safety-pin be available, cut the end of the bandage down the middle for a few inches, twist one piece once round the other (to prevent tearing), bring the pieces around opposite sides of the part, and, keeping it taut, tie a surgeon's knot.

Note.—Although it is important to use equal pressure in all turns of the bandage, it must be borne in mind that if the bandage be too tight the circulation would be interfered with, but if not sufficiently tight the bandage might fall off; therefore the happy medium is required.

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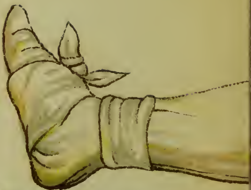


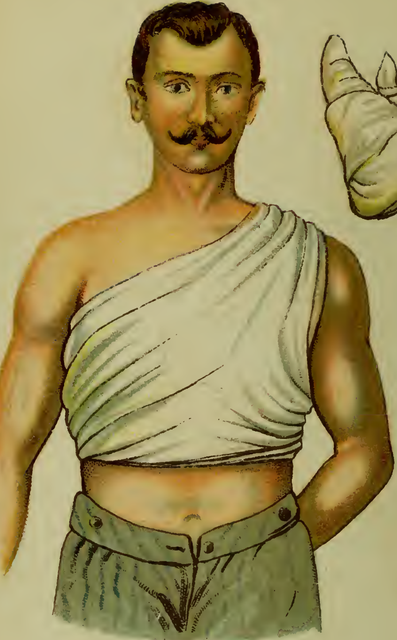
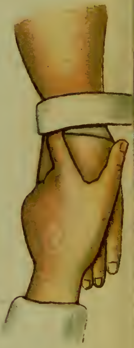


Fig. 13 a.



## THE TRIANGULAR BANDAGE

Fig. 12. The bandage applied to knee, calf and foot

Fig. 13a. The bandage applied to the chest.

Fig. 13b. The back view of the above. Note how o
bandage, which has been pulled tightly ove

Fig. 14. Demonstrates the method of fixing the roller

14.

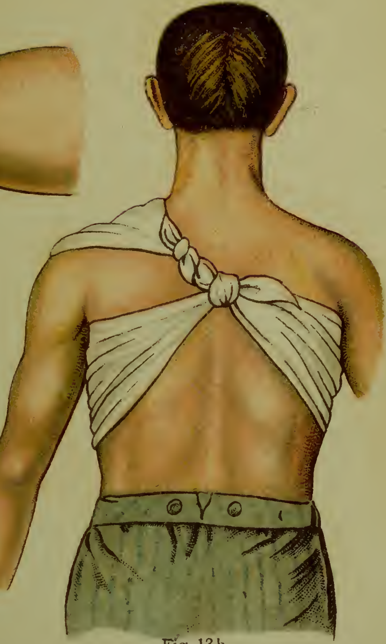


Fig. 13b.

## THE ROLLER BANDAGE.

for applying dressings or poultices etc.

the ends of the first knot is tied to the apex of
shoulder.

age.

When taking off the bandage, undo the safety-pin, or carefully cut the knot with scissors, then unwind the bandage by grasping the loosened part with the hand and forming large coils as you proceed.

The roller bandage is used in three ways: (1) The spiral, (2) the reverse, (3) the figure-of-eight.

**THE SPIRAL** is employed when the part is cylindrical, as, for instance, the upper arm, the lower part of the forearm, a small portion of the leg immediately above the ankle, and the fingers. To put on the spiral bandage you simply encircle the limb with the bandage in such a manner that each new turn overlaps its predecessor by two-thirds the width of the bandage. Naturally, in this and in the other methods of using the roller bandage the rules of bandaging must be adhered to.

**THE REVERSE** (Plate VI., Fig. 15) is used where the limb is cone-shaped; thus, above and below the knee, the upper part of the forearm, etc.—briefly, where the limb tends to get larger or smaller. At a cone-shaped part the spiral bandage becomes loose on the narrower, and tight on the thicker, part. To put on the reverse bandage, direct the bandage slightly to the thicker part of the limb with the right hand, fix the lower edge firmly with the left thumb, unroll 3 inches of the bandage, turn the latter towards the narrower part of the limb, making a half-twist with the wrist, and the bandage falls into position. Now pull firmly, remove the thumb, finish the turn in a circular manner, and reverse again. All the reverses should be to the outer side of the limb and exactly in a line.

**THE FIGURE-OF-EIGHT** (Plate VI., Fig. 17) is used for an irregular part, which is not suitable for either the spiral or the reverse, such as a joint. It consists of forming figure-of-eights with the bandage until the part is covered.

**THE SPICA** (Plate VI., Fig. 16) is simply a figure-of-eight bandage. The name (which means a spike of corn) denotes the resemblance of the cross-like appearance of the intersections of the figure-of-eights to an ear of corn. A special form is called the "divergent spica." It is used for the bent knee, the elbow, and the heel.

Therefore, in bandaging from the wrist to the shoulder, commence with the spiral, which is continued for a few inches, when the reverse becomes necessary. Continue the latter until within 2 inches of the elbow, where a figure-of-eight is required. Above the elbow a few reverse turns may be necessary, but the greater portion of the upper arm is bandaged with the spiral bandage.

## TO BANDAGE THE FINGER.

The width of the bandage used varies from ½ to 1 inch, according to circumstances. The back of the hand to be bandaged is turned upwards, and the injured finger separated as much as possible from the others. Hold the bandage in the right hand, and commence at the root of the thumb. Leave here 3 inches free, carry the bandage over the back of the hand, and take two turns around the wrist (to fix), then bring the bandage over the root of the thumb to the root of the finger to be bandaged. Take the bandage to the finger-tip by one long spiral movement along the finger. Now cover the finger by a series of spirals from the tip to the root, covering two-thirds of the previous spiral with the following turn. At the root of the finger bring the bandage across the back

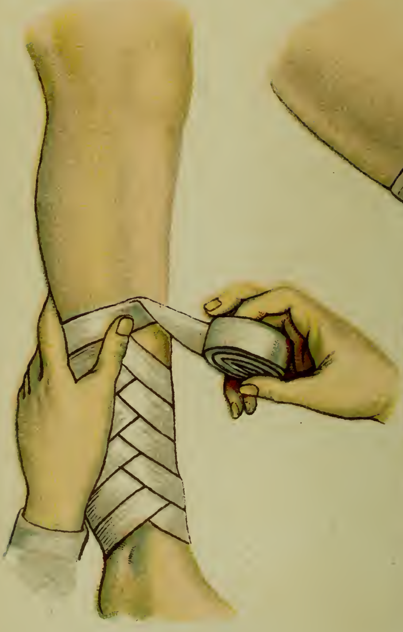


Fig. 15.

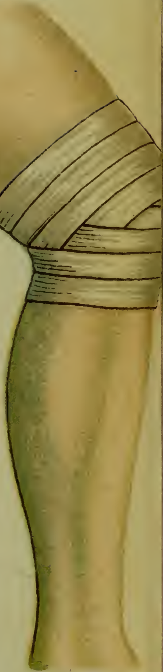


Fig. 16.

## THE ROLLER B

Fig. 15. The method of making the "reverse" ban
a larger, as from the ankle to the calf, or
Fig. 16. The "figure-of-eight" bandage, which is ve
Fig. 17. Figure-of-eight bandage applied to the han
Fig. 18. The foot bandaged, leaving out the heel.
Fig. 19. The foot, heel and ankle covered by a "s

VI.

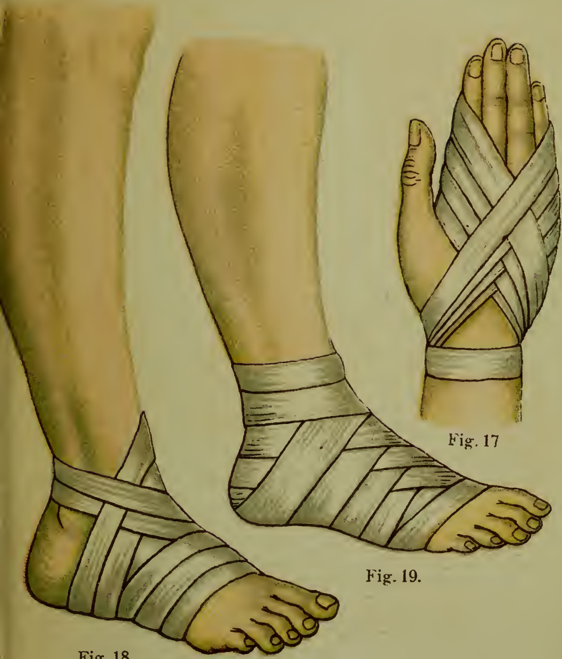


Fig. 17

Fig. 19.

Fig. 18.

## GE (CONTINUED).

It is used when bandaging from a smaller part to
bandaging from a larger to a smaller part.
eful when bandaging joints.

bandage.

of the hand to the little-finger side of the wrist (around which one turn is taken), and tie this end to the other end (the 3 inches left at the base of the thumb) with a surgeon's knot.

When several fingers are to be bandaged, a turn must be taken around the wrist before commencing another finger.

## TO BANDAGE THE THUMB.

This is effected by a spica, the figure-of-eights being taken around the wrist and then around the thumb, each turn at a lower level until the thumb is covered. The bandage is commenced at the root of the thumb and finished at the thumb side of the wrist. A 1-inch bandage is used.

## TO BANDAGE THE EXTENDED HAND.

The hand is opened out with the back of the hand upwards. A 1½ or 2½ inch bandage is used, according to circumstances. Small oblong pads of dry cotton-wool are placed between the fingers ; this prevents friction. The thumb is not included in the bandage.

Commence with a figure-of-eight by placing the tail of the bandage beneath the middle of the forefinger. Take it upwards over the back of the hand and around the wrist, thence over the back of the hand to nearly the end of the little finger. From here the bandage is brought beneath the under surface of the fingers (the ends of the fingers being left out) to the index finger and back to the little finger. The bandage now being fixed, a series of reverses on the back of the hand ultimately bring the bandage to the root of the thumb. Now a few turns are taken around the wrist, and the bandage is pinned, unless it be necessary to continue the bandage up the arm. This is an even better method than the figure-of-eights shown in Plate VI , Fig 17.

### TO BANDAGE THE FOOT (*Plate VI., Fig.* 18).

Use the 2½-inch bandage. Begin under the ball of the big toe and carry the bandage across the instep to the outer side of the ankle, to its inner side, next across the instep to the ball of the little toe, under the foot to the big toe. Now take a spiral around the foot near the roots of the toes. By a series of reverses mount the instep, and when near the ankle, a couple of figure-of-eights around the ankle and the foot fix the upper end.

If it be desired to continue up the leg, first spiral and then reverses are needed until the knee is reached.

To include the heel, a divergent spica is used (Plate VI., Fig. 19).

### TO BANDAGE THE KNEE (*Plate VI., Fig.* 16).

A 2½-inch bandage is used. The knee is slightly bent, and a divergent spica bandage applied thus: The tail of the bandage is laid against the inner side of the knee, the bandage is brought across the knee-bone, and encircled round the knee to the starting-point. The second turn is made at a slightly lower level, and fixes the lower loose margin of the first turn. The third turn is placed above the first, and secures its upper loose margin. The next turn would be below, and the subsequent one above the knee, and so on. Each turn covers two-thirds of the bandage next to it. When sufficient has been covered, the bandage is fixed at the upper part of the calf. This bandage allows of a certain amount of movement at the knee-joint.

P

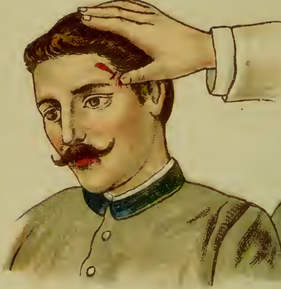


Fig. 20

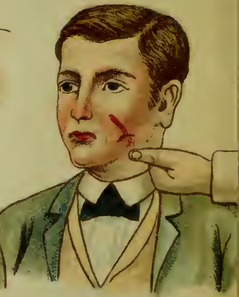


Fig. 21.

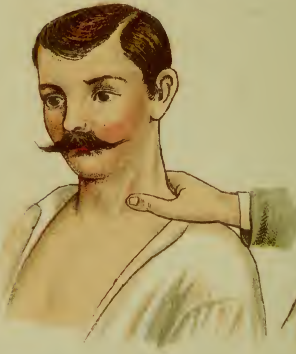


Fig. 22.

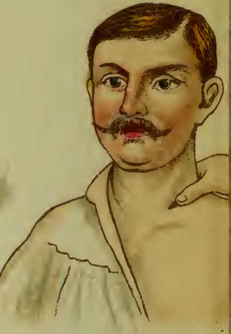


Fig. 23.

## THE TREATMENT OF HAEMORRH

Fig. 20. Haemorrhage from blood vessels in the T
Fig. 21. Haemorrhage from blood vessels of the fa
Fig. 22. " " " " in the ne
Fig. 23. An endeavour to stop severe haemorrhag
with the thumb.
Fig. 24. Stopping haemorrhage in the upper arm b
of the upper arm.
Fig. 25. Both thumbs applying pressure to the chie

VII.

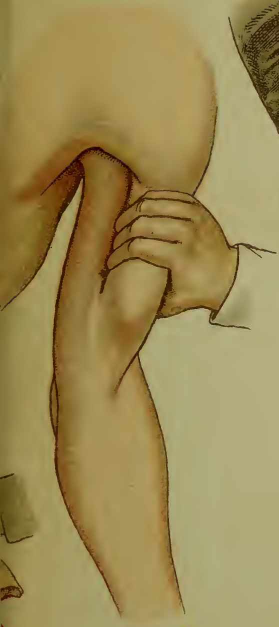


Fig. 24.

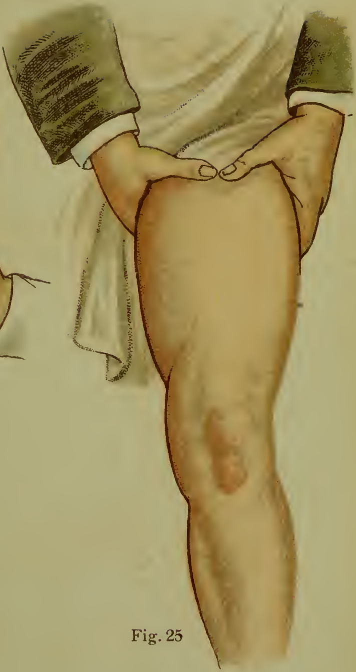


Fig. 25

## BY THUMB or FINGER PRESSURE.

treated by thumb pressure.

the arm by pressing upon the subclavian artery

ssing the chief artery of the part against the bone

ry of the thigh.

# HÆMORRHAGE.

There is, perhaps, nothing of more importance which anyone interested in First Aid may be called upon to treat than hæmorrhage. Not only is it necessary for the correct treatment to be done: it likewise must be done quickly, lest the person bleed to death. This can easily happen in severe hæmorrhage. A knowledge of the circulation is a distinct help in the understanding of hæmorrhage. This information can be obtained by perusal of the author's work on "Home Nursing" (p. 43).

The cause of hæmorrhage is damage done to the bloodvessels, which allows blood to escape from them. This damage may be due to cuts, falls, blows, kicks, etc. (Internal hæmorrhage is frequently due to diseased conditions of the bloodvessels.)

The bleeding may come from (1) an artery, (2) a vein, or (3) capillaries. Further, hæmorrhage may be external, as from a cut hand, etc.; or internal, when it emanates from the lungs or stomach, etc. In **arterial** bleeding the blood is scarlet. It may spurt out in jets (if the damaged artery be close to the skin). It can be controlled by pressure on the bloodvessel between the wound and the heart. In **venous** hæmorrhage the blood is of a darker tint than arterial. It escapes slowly and continuously from the wound; it can be controlled by pressure over the bloodvessel on the side of the wound farther from the heart. (Varicose veins are often exceptions, and bleed from both ends of the cut veins). In **capillary** hæmorrhage the blood is red, and oozes from the wound.

NOTE.—In most cases of hæmorrhage the blood comes from arteries, veins, and capillaries. Occasionally it is arterial alone, as when an artery bursts; or venous alone, from a burst varicose vein; or only capillary, as from an abrasion of the skin.

## TREATMENT OF HÆMORRHAGE
(*Plates VII. and VIII.*).

1. Act quickly and keep cool.

2. Find out exactly where the bleeding comes from.

3. In severe hæmorrhage it is better for the patient to sit or lie flat down, as, the heart's work being reduced in these positions, less blood escapes from the wound.

4. As a temporary means of relief, the thumb can be placed firmly against the bleeding vessel. Endeavour to press the vessel against a hard substance, as a bone.

5. Quickly apply some dry lint, linen, or a handkerchief directly over the wound with a bandage (triangular or roller); put it on firmly, and tie over the bleeding part. If no bandages be present, use whatever may be at hand, such as a piece of shirt or a handkerchief. Do not use cold water unless it has recently been boiled.

6. Raise the bleeding part above the rest of the body.

7. In those rare instances in which the hæmorrhage is not stopped by this treatment, apply pressure to the vessel which supplies the bleeding part with blood. This may be done with the thumb or by improvised tourniquets (see Plates VII. and VIII.).

8. Keep the patient quiet, and do not give any alcoholic drink, as it would increase the bleeding.

9. In all serious cases send for a doctor at once.

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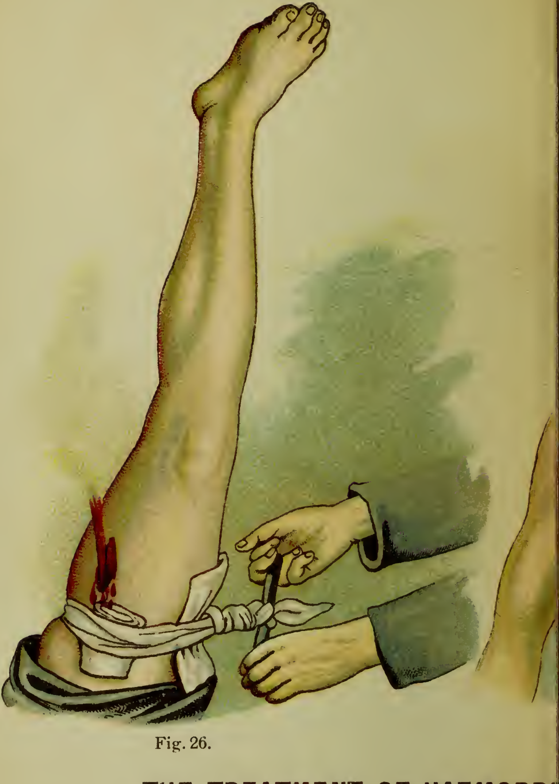

Fig. 26.

## THE TREATMENT OF HAEMORRI

Fig. 26. Method of controlling serious haemorrhage
quet over the main artery of the part.

Fig. 27. The control of serious haemorrhage from t
the upper arm.

III.

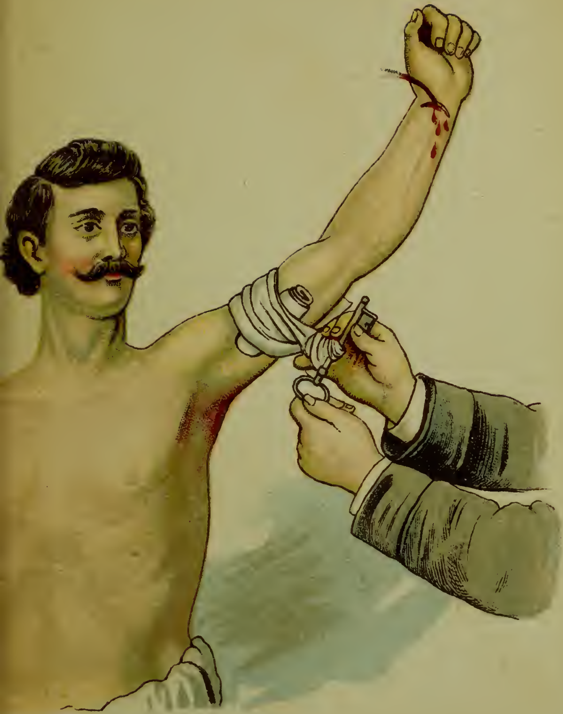

Fig. 27.

## BY IMPROVISED TOURNIQUETS.

the thigh by quickly applying a readily made tourni-

ist by applying a tourniquet to the chief artery of

## CONCERNING TOURNIQUETS

### (*Plate VIII.*, *Figs.* 26 *and* 27).

It may here be stated that a satisfactory tourniquet can quickly be improvised with a pad (lint, handkerchief, triangular or roller bandage rolled up), made firm and to fit the part to which it is to be applied, a triangular or roller bandage, and a stick or key. The bandage fixes the pad in the correct position, and the stick or key allows the requisite pressure to be applied to the artery. Where a great distance has to be travelled for surgical aid, the stick can be kept in position by another bandage. The position of some of the important arteries and the method of applying pressure to them in order to stop a hæmorrhage in their vicinities is shown in Figs. 20 to 27.

## NOSE-BLEEDING.

Usually the blood issues from one nostril only. The bleeding may be slight or severe. Set the person down in a chair, place the head well back, to make the nose the highest point, and extend his arms well above his head. Advise him to breathe through his mouth. Should this fail to stop the hæmorrhage, a key put on the spine may prove serviceable. In most cases pressing your index finger against the wing of the bleeding nostril, in order to bring it firmly but gently against the central partition of the nose, proves efficient. Another useful remedy is the application of cold water or ice to the nose. Never give alcoholic drinks, and keep the person quiet for an hour or two afterwards. He should take his food cold for a time. Plugging the nose must only be undertaken by a doctor. Sometimes the blood is swallowed and afterwards vomited up again, when it might appear to have come from the stomach, but a glance inside the nose will usually reveal the source of the bleeding.

## BLEEDING FROM THE CHEEK.

Compress the bleeding vessels between the forefinger placed inside the mouth and the thumb outside.

## BLEEDING FROM THE LUNGS.

The person would probably have suffered for some time from disease of the lungs. The blood is coughed up nearly unchanged, but mixed with phlegm. There is often pain in the chest, and the sufferer looks very ill. If the hæmorrhage be severe, he soon becomes giddy, pallid, and faint. Lay the patient down, with the chest and shoulders raised. Loosen the clothing on the chest and neck, but cover him up with a blanket. Keep him perfectly quiet, and give ice to suck, if procurable, but no alcohol. Send for medical aid

## BLEEDING FROM THE STOMACH.

The blood is vomited up, and as a rule the patient has had stomach trouble for some time. The blood may resemble coffee-grounds. It is generally mixed with food. If much bleeding takes place, he soon loses strength, and becomes pallid and faint. Lay the person down, loosen the clothing over the stomach, and keep him quiet. Give no food whatever, but ice may be sucked. Obtain medical assistance. It is well to remember that bleeding from the stomach may occur without vomiting, the blood finding its way into the bowel.

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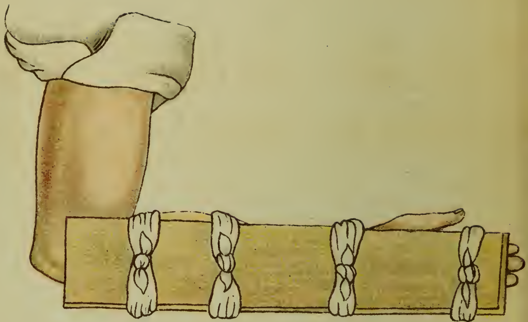

Fig. 28.

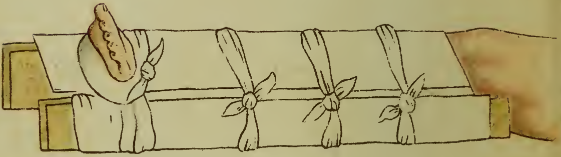

Fig. 29.

## TREATMENT OF

Fig. 28. Suitable method of applying splints for a

Fig. 29. Suitable method of applying splints for a f

Fig. 30. The application of splints for a fracture of

Fig. 31. Presuming that no suitable splints are ava
to the broken leg. This diagram illustrates
tween the ankle and the knee.

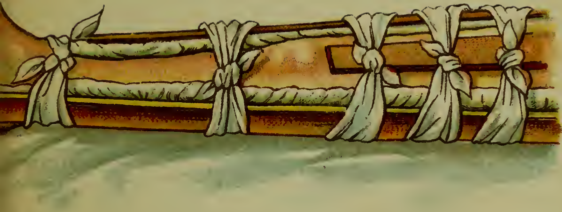

Fig. 30.

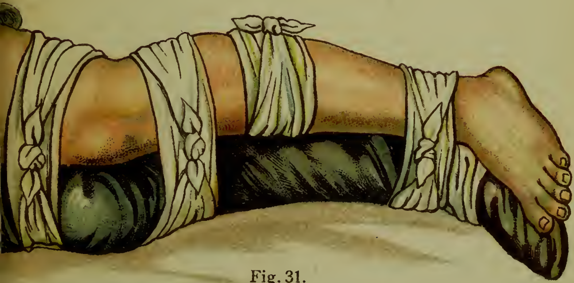

Fig. 31.

## TURES: SPLINTS.

e of one or both bones of the fore-arm.
e of one or both bones of the leg.
high bone.

the sound leg may be utilised to act as a splint
cture of the bones of the left leg about midway be-

### BLEEDING FROM VARICOSE VEINS.

Place a firm and tolerably large pad over the bleeding vein, and bandage it on tightly with a triangular or roller bandage. Raise the part above the rest of the body and keep the patient quiet. Take off any constrictions on the limb, such as a garter. The object of the large pad is to prevent the possibility of the vein bleeding from both cut ends, a contingency which has to be guarded against with varicose veins.

### BLEEDING FROM THE PALM.

This may be severe, and need a special bandage. Fold a clean handkerchief or some lint to fit the palm, or use a roller bandage. Any of these will act as a pad. Close the fist tightly on the pad, and bandage the closed hand firmly with a roller or triangular bandage. Keep the hand elevated.

## THE TREATMENT OF WOUNDS.

In treating wounds, observe the strictest cleanliness. The person rendering first aid should thoroughly wash his hands before touching the wound, or he might introduce undesirable material into it and cause great harm. Pieces of glass, stone, or metal can then be taken out, or washed out, if small, by cold water previously boiled. Sanitas and lysol are excellent antiseptics to add to the water in the quantities printed on the labels. When the wound is cleansed, the hæmorrhage must be effectively stopped, a dry dressing of lint, gauze, or cotton-wool applied, and properly bandaged on. The damaged part is kept at rest by a sling or some suitable apparatus, according to circumstances.

# FRACTURES.

By a fracture is meant a broken bone.

## KINDS OF FRACTURES.

I. Simple = broken bone, with little or no damage to the skin and muscles.

II. Compound = broken bone, with damage to the soft parts, so that air, which may be laden with undesirable germs, is admitted to the fracture.

III. Complicated = broken bone, and also injury to some internal part, as the lung, heart, brain, spinal cord, bladder, etc.

IV. Comminuted = bone broken into several pieces.

V. Impacted = where one broken end of the bone is forced into the other, or impacted.

VI. Greenstick = a special form of fracture which occurs in children, owing to the comparative softness at the ends of some of their bones. The bone is not necessarily broken across.

## CAUSES OF FRACTURES.

I. Direct violence = when bone breaks at the place where the force is applied.

II. Indirect violence = when the bone breaks at some distance from the place to which the force is applied, as falling on the hand and breaking the collar-bone.

III. Muscular action = a sudden and powerful contraction of the muscles, as those of the front of the thigh, may break the kneecap.

## SIGNS AND SYMPTOMS OF FRACTURES.

I. Pain over the broken bone.
II. Loss of power of the limb.

PLAT

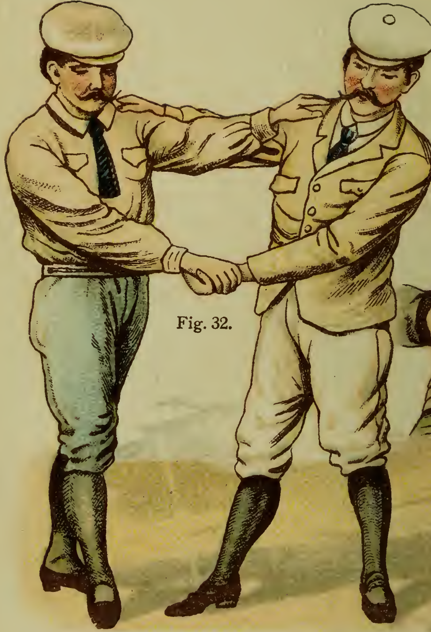
Fig. 32.

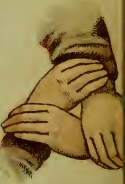
Fig. 33.

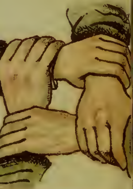
Fig. 34.

## CARRYIN

Fig. 32. The two-handed seat for carrying a patien
Fig. 33. The three-handed seat.
Fig. 34. The four-handed seat.
Fig. 35. A method of carrying a patient which ma
plished.
Fig. 36. Illustration of the use of the four-handed s

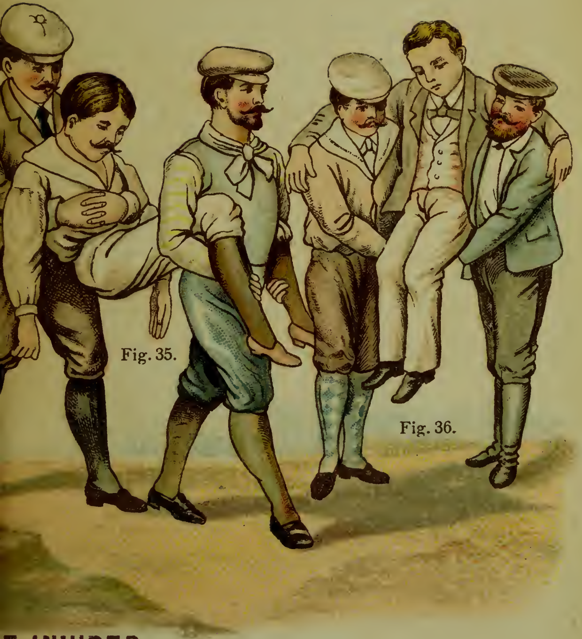

Fig. 35.

Fig. 36.

## E INJURED.

useful when a fairly long journey has to be accom-

III. Swelling over the injured part.

IV. Deformity, and often shortening, of the broken limb.

V. Unnatural mobility. A limb may be moved at the broken spot. No one but a surgeon must try this.

VI. Irregularity of the bone.

VII. Crepitus is often heard if one end of the broken bone is gently moved against the other end. (Only to be tried by a surgeon.)

It is important to bear in mind the account of the injury, and if a distinct crack of the bone was heard, as sometimes happens.

In examining for a fracture, great caution is to be observed, lest a simple fracture be made into a compound one, or the adjacent organs be injured.

## METHOD OF TREATING A FRACTURE.

I. The broken ends of bone are placed in exact apposition to each other (setting the fracture).

II. The broken bone being set, the fracture is kept in proper position by the application of splints.

Should there be bleeding or dirt in the part, it must be attended to before putting on splints; also the general condition of the patient needs care. A fracture of the haunch-bones, spine, or thigh-bone should be removed upon a stretcher. Keep the patient warm. Attend to the fracture at the place where the patient was injured; this prevents worse injuries. Immediately support and hold steadily the injured limb. If engaged at stopping hæmorrhage, see that someone else steadies the limb. It is unwise for anyone but a surgeon, or a person experienced in fractures, to attempt to correct deformity or shortening of a limb.

## SPLINTS AND THEIR APPLICATION (*Plate IX.*).

The object of using splints for fractures is to keep the injured parts in proper position and at rest. Amongst various kinds of splints might be mentioned pain (because the fear of it makes the patient keep the injured part quiet), bandages, smooth pieces of wood, the fellow-limb (if the leg), umbrellas, guns, and special metal and other appliances. Splints must be chosen that are suitable to the fractured part. Before use they should be well padded on the side which will be in contact with the limb. If in doubt as to whether or not the splints are of suitable size, measure them by the sound limb. The splints are kept in position by roller or triangular bandages, or, if these are not handy, by handkerchiefs or pieces of shirt, etc. Tie all the knots in a line, and, where possible, over a splint. Never put on a bandage over the splints at the seat of injury, as this might be painful and injurious. While the splints are being adjusted, an assistant holds the limb steady and in the correct position. Tie the upper end of the splint first, the lower end next, then fasten a bandage on either side of (but not over) the injured part. Where, as in a fracture of an upper limb, an arm-sling is worn to support it, be sure to hold the limb with your hands until an assistant has correctly fixed the sling in position. In a fracture of the lower limb, the patient can be moved to a conveyance as soon as the splints are in proper position. The conveyance should travel rather slowly, to avoid jarring the fractured bones.

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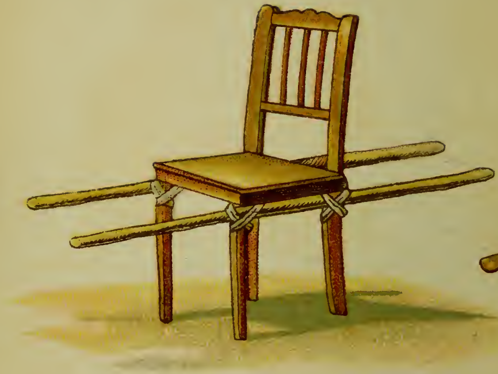


Fig. 37.

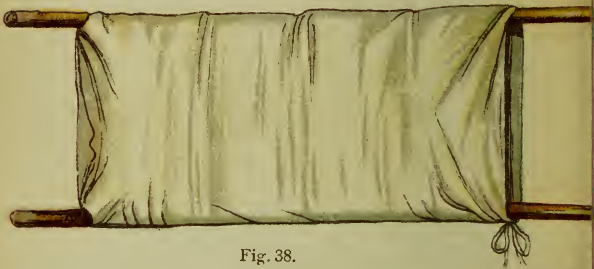


Fig. 38.

## STRET

Fig. 37. A chair and two poles can make a useful

Fig. 38. Two poles put through openings in the four c
patient.

Fig. 39. Stretcher made from a sheet and two poles

Fig. 40. Stretcher suitable for carrying a patient su
raising him from the stretcher.

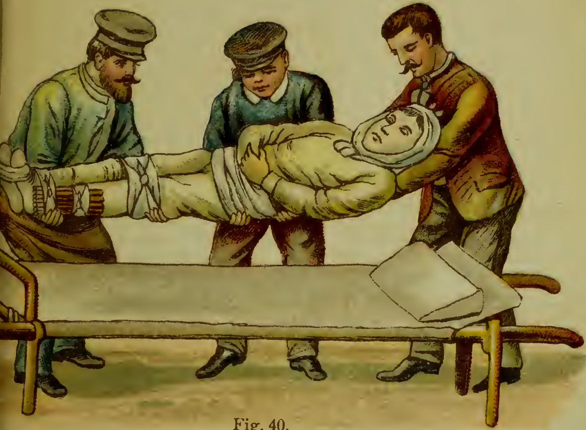


Fig. 40.

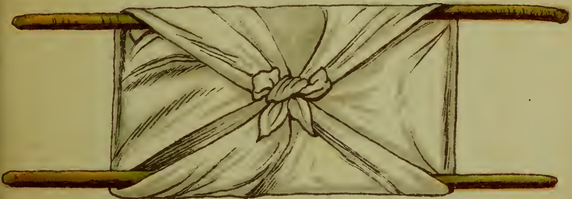


Fig. 39.

## RS etc.

s of transport for a conscious patient.
rs of a sack: an excellant stretcher for an unconscious

ng from a fractured bone. Observe the method of

## TREATMENT OF FRACTURE OF ONE OR BOTH BONES OF THE FOREARM

(*Plate IX., Fig.* 28).

The forearm is bent at a right angle to the upper arm in front of the body, the thumb being placed upwards. Two splints are applied, and, where practicable, they ought to be slightly broader than the forearm. One splint reaches from 1½ inches below the inner side of the elbow to within an inch of the finger-tips; the other extends from the outer side of the elbow to the back of the hand. Both splints are well padded with smooth layers of cotton-wool, lint, or soft towels, before being put into position. It is best for the padding to slightly project beyond the borders of each splint. Fasten at the upper end, then at the lower end, and, lastly, on either side of the fracture. Finally, adjust the large arm-sling. The forearm is held firm by an assistant until the splints are fixed.

## TREATMENT OF FRACTURE OF THE UPPER ARM.

The forearm is bent at a right angle to the upper arm. Apply four splints—one on each side of, one in front of, and the fourth behind, the upper arm. The splints reach from the shoulder to the elbow, except the front splint, which must not quite reach to the bend of the elbow. The essential splints are those on the inner and outer sides of the arm. Adjust a small arm-sling.

If nothing else be available, tie the upper arm securely to the side of the body with two broad bandages.

## TO TREAT FRACTURE OF THE THIGH-BONE (*Plate IX.*, *Fig.* 30).

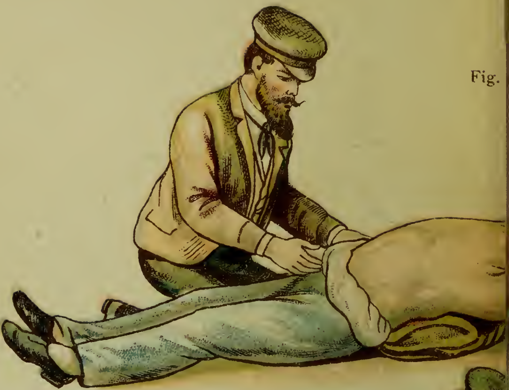
The limb is held in good position by an assistant. Four splints should be used, if available—one reaching from the armpit to the foot, another from the top of the inner side of the thigh to the knee or foot; another in front of the thigh, reaching from 2 inches below the groin to 1 inch above the knee-bone; and the fourth from below the buttocks, nearly to the back of the knee. Bandages are fixed above and below the fracture, above and below the calf, and around the ankle. The outer long splint must be fixed also around the chest just below the armpits and around the haunch-bones. See that the splint is especially well padded in the armpit. If the foot can be supported and kept at right angles by the ankle bandage, all the better.

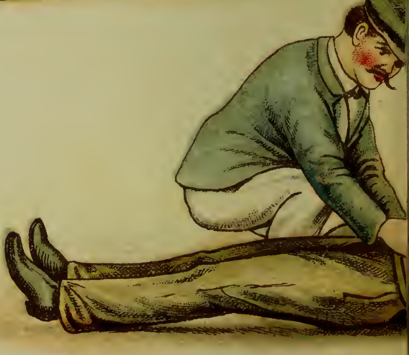
## TREATMENT OF FRACTURE OF ONE OR BOTH BONES OF THE LEG (*Plate IX.*, *Fig.* 29).

The best method of dealing with this condition is to put up the leg in a box-splint, thus: Obtain two pieces of thin, smooth board, wider than the depth of the limb, and reaching from above the knee to below the foot. Fold an ordinary rough towel to the length of the splints, and roll over one splint in each end of the towel until the box so formed just fits the sound leg. The broken leg being held in proper position, this box-splint is gently applied to it, and two small face towels are folded and placed over the front of the leg. Bandages are fastened below the knee, above the foot, and above and below the fracture. A figure-of-eight bandage is used to support the foot at right angles to the leg.

PLA

Fig.





## ARTIFICIAL RE

Fig. 41. Method of produc

Fig. 42. Method of produc

XII.

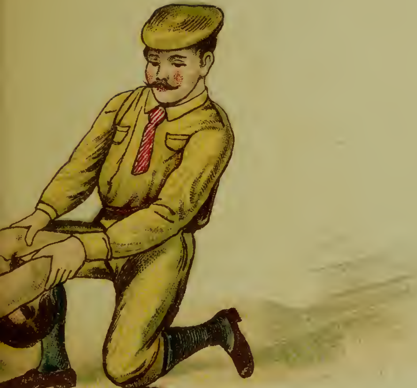
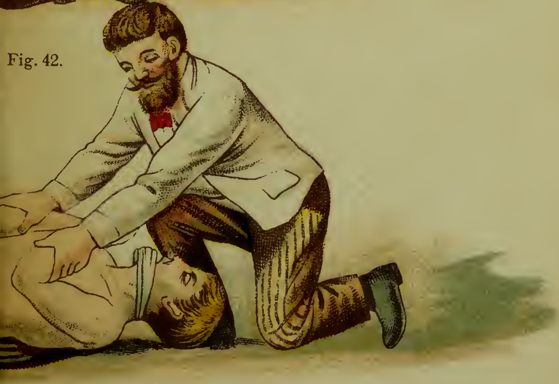


Fig. 42.



## RATION.

an inspiratory act.
an expiratory act.

## TREATMENT OF FRACTURE OF THE RIBS.

It is not always easy to be certain that a rib is really fractured; but where we have the history of an injury to the part, the attempt at deep breathing accompanied by much discomfort and pain, it would be better to treat the case as one of fractured rib or ribs.

Occasionally a broken rib is driven into the lung, the liver, or the spleen, thereby causing a hæmorrhage from the injured organ.

Two narrow bandages should be secured moderately tightly around the chest in such a manner that the bandages meet everywhere, but with as little pressure as possible over the broken rib. The knots are tied in front on the opposite side of the body. The arm on the side of the fractured ribs is supported by a large arm-sling.

NOTE.—In fracture of the *pelvic bones* (haunch bones) the bladder is sometimes injured; therefore keep the patient quietly in a comfortable reclining position, and obtain medical aid at once.

## DISLOCATIONS.

Where one or more bones of a joint are displaced from their normal positions in the joint, a dislocation is said to occur. The force or wrenching movement causing a dislocation is often considerable. Dislocation at the shoulder-joint is more frequent than elsewhere.

As this is purely a matter for a surgeon, no one else should touch it, lest much unnecessary damage be done. There is no harm in supporting the part by a sling or pinning the sleeve to the coat, providing neither method causes discomfort and increased pain.

It is better to lay the patient down, and support the injured part by a pillow placed in a comfortable position.

## SPRAINS.

Sprains are fairly frequent accidents to some joints with those who play violent games. The usual joints affected are the ankle and wrist. A sprained ankle is generally caused by a sudden twisting or wrenching movement which stretches, or even tears, the capsule or other soft part of the joint. There is naturally a good deal of pain in the sprained joint, which cannot perform its normal function. The swollen condition of the tissues around the joint and their discoloured appearance indicate the damage that has been done.

Keep the patient quiet in a comfortable position, take off the boot and stocking, raise the limb, and, if the injury has just been done, a cold-water dressing is indicated; but if the injury happened the previous day, a warm fomentation will give greater relief. Should the attempt to walk be necessary before the joint has sufficiently healed, a roller bandage ought to be first applied around the foot and ankle.

## CARRYING THE INJURED (*Plate X.*).

There are four methods of taking an injured person from one place to another:

1. By supporting the patient.
2. By carrying the patient.
3. By stretcher.
4. By conveyance.

**BY SUPPORTING THE PATIENT.**—In a case where a person, being only slightly injured, is in a condition to walk, and only one individual is present to attend to him, this method proves useful. The injured person places one arm around his supporter's neck, the hand being held by the latter's corresponding hand, while the supporter's other arm holds the patient around the waist. They thus walk side by side.

BY CARRYING THE PATIENT.—This can be done by—

(*a*) The two-handed seat (Plate X., Fig. 32).

A helpless patient can be carried by this seat.

The two carriers stand opposite each other, one on each side of the patient. They stoop and pass one arm behind the patient's back, grasping some of his clothing at the same time. The carriers slightly raise the patient's back. Next they each place their other forearms under the middle of the patient's thighs, one clasping the other's wrist. The carriers now carefully rise together and move off, the right carrier with the right foot and the left carrier with the left foot.

(*b*) The three-handed seat (Plate X., Fig. 33).

A patient who has one of his lower limbs injured (and which needs a supporting hand), but who has complete use of his arms, can be satisfactorily carried by this seat.

The two carriers stand facing each other just behind the person injured. If the right limb be injured, proceed as follows: The left carrier grasps tightly his own right wrist with his left hand and the right carrier's left wrist with his right hand, the right carrier grasping the left carrier's left wrist with his left hand, thus leaving the right hand free to look after and support the injured person's right leg.

Where the left leg is injured, all the above directions are changed *vice versa* with regard to right and left.

The carriers stoop so that the patient can place one arm around the neck of them. The three-handed seat is now adjusted under him. The carriers then rise up carefully together and step off, the right carrier with the right foot and the left carrier with the left foot.

(*c*) The four-handed seat (Plate X., Figs. 34 and 36).

When the patient is able to assist the carriers and use his arms, this seat is useful.

The two carriers, facing each other just behind the patient, grasp their own left forearms with their right hands. They next grasp each other's right forearm with their left hands. They now stoop down so that the patient can sit on the four-handed seat. The patient places an arm around the neck of each carrier. The carriers carefully rise up together and step off, the right carrier with the right foot and the left carrier with the left foot.

(*d*) The fore-and-aft method (Plate X., Fig. 35).

This method of carrying the injured is useful where the space is small and does not allow of the other methods already described, and where a tolerably long journey is necessary.

The second carrier passes his arms under the patient's armpits and across the chest, where the hands are clasped. The first carrier supports the knees, as shown in the diagram. The first carrier marches off with his left foot and the second carrier with his right foot. The step taken should not be too long.

## STRETCHERS AND THEIR SUBSTITUTES (*Plate XI.*).

Among the list of stretcher substitutes may be mentioned what might be called the "chair stretcher" (Fig. 37).

This is made by securely lashing two poles to a chair. It can only be used where the patient is quite conscious and his condition admits of him sitting up. The patient should be tied to the back of the chair by two triangular bandages. The taller carrier takes the front handles. The front carrier starts off with his left foot and the back carrier with his right.

Always carry the patient feet foremost on a stretcher, unless there be particular reason to the contrary.

Never place a patient upon an improvised or other stretcher until it has been tried and found to be safe.

Other stretcher substitutes can be made with two poles and a coat, sack, sheet, or blanket, etc. Occasionally a shutter with straw or hay spread on it does service for a stretcher.

**TO USE A COAT.**—Turn the sleeves inside out, pass the poles through them, and button up the coat. If one coat only be used, the patient rests his back against the back of the front carrier. If two or three coats be used, the patient will be enabled to lie down. The buttons are, of course, placed under the stretcher.

**TO USE A SACK** (Fig. 38).—Cut two holes in the bottom corners of a sack, and pass two strong poles through them. If stout string or cord be available, cut two small holes at the top of the sack on either side, and close to the inside surfaces of the poles· secure the poles tightly with the string.

**TO USE A SHEET** (Fig. 39).—The sheet is folded and tied as in the figure. If suitable pieces of wood are at hand, they can be used as crossbars to keep the stretcher apart in this and other improvised methods. They are placed just beyond the sheet or sack, and must be tied very securely to the stretcher poles.

Whether the real stretcher or a substitute be used, always endeavour to place any bleeding part as high as possible. This needs to be especially remembered in ascending and descending hills.

## A STRETCHER FOR THREE CARRIERS (*Fig.* 40).

One man takes charge of the injured part and gives all orders; the other two help him to lift the patient and carry the stretcher.

(*a*) The stretcher is placed in a line with the patient's body, the front of the stretcher being close to his head.

(*b*) One carrier stands near to the injured part (which in the diagram is the left leg), another at the middle, and a third at the head.

(*c*) They all kneel on the left knee, and get ready to lift by placing their hands well under the patient's body. The injured part is specially looked after, one hand being placed on either side of it.

(*d*) The carriers slowly rise together at the word "Lift," the patient's body being kept level.

(*e*) At the command "Carry to stretcher" or "March" they all take short side steps until the patient's head is exactly over the pillow, when the word "Halt" is given.

(*f*) At the command "Lower to stretcher" or "Lower" the carriers bend and very carefully deposit the patient on the stretcher. They then gently take away their hands and stand upright.

(*g*) At the command "Fall to stretcher" or "Fall in" one stands at the foot of the stretcher, another at the head (facing the patient's head), and the third stands on one side to look after the patient.

(*h*) At the command "Grasp handles" the two carriers take good holds of the poles. If slings be used, they are previously adjusted.

(*i*) The order "Lift stretcher" is now given, and the carriers slowly and carefully stand up.

(*j*) All being now ready, the order is "March." The front carrier steps off with the left foot and the back carrier with his right. A 20-inch step is taken, with bent knees.

(*k*) Having reached the destination, the order to "Halt" is given.

(*l*) The next command is "Lower stretcher." The latter is carefully lowered to the ground; if straps have been used, they are taken off, and the carriers stand upright.

(*m*) At the command "Prepare to lift" or "Unload" the three carriers stand in the same positions around the patient upon their left knees, as they did to lift the patient on to the stretcher.

(*n*) Next the order "Lift" is given. The carriers raise the patient gently, and by small side steps get away from the stretcher, and take the patient to the bed or such place as has been determined.

(*o*) Finally, at the order "Lower" the patient is lowered with the usual care.

## ARTIFICIAL RESPIRATION (*Plate XII.*).

Everyone ought to be able to carry out efficiently the process known as artificial respiration, as one never knows when it may be necessary to be applied in order to save life. There are two excellent methods in general use, one of which we owe to Dr. Silvester and the other to Professor Schäfer.

## SILVESTER'S METHOD (*Plate XII.*).

Place the patient on his back immediately, either upon the ground or the floor. Not a moment is to be lost. If the surface be uneven, let the head rest on the higher level. All clothing from the neck to the waist should be removed in the case of men, and everything tight, including corsets, loosened with women. Make a small cushion with some of the clothes and place it under the shoulders (Fig. 41).

If there be anything about the mouth or nose that needs cleansing away, see to it at once. Open the mouth; an assistant draws forward the tongue and holds it there. A better hold of the tongue is obtained if a small piece of linen or a handkerchief be placed over the front of it. When no assistant is present, the tongue can be drawn forward and secured there by a bandage, as shown in Fig. 42.

The imitative respiratory acts of inspiration and expiration are now initiated in order to induce respiration, thus: One person kneels behind the patient's head and graps his forearms near the elbows. He then makes a sweeping movement with the arms towards himself, bringing the arms well outwards and finishing near to the ground. In this manner inspiration is imitated. Now he brings the elbows forwards, inwards, and towards the lower part of the chest, pressing them firmly against the latter (Fig. 42). Thus is expiration imitated.

These movements are to be done slowly and decidedly, and, of course, alternately, at the rate of fifteen times a minute. Persevere to induce respiration for an hour or more, if necessary, or until a doctor pronounces life to be extinct.

It is well, when two assistants are at hand, to combine HOWARD'S method with Silvester's in this manner (Figs. 41 and 42): One assistant kneels (or, better, kneels on one knee and puts the other foot to the ground) by the patient's hip, and moves forward to place his thumbs on the pit of the stomach, while the fingers are put on the adjacent ribs. He presses firmly, but not severely, and then goes back, quickly removing his hands, counts 1, 2, 3, and moves forward again.

The whole surface of the thumbs must be used, and not the ends. He keeps time with the person doing Silvester's method, pushing forward at the expiratory act and springing back to his knees for the inspiratory act.

## SCHÄFER'S METHOD.

In this method there is no need to remove the clothing. Place the patient on the ground immediately, so that he lies on his front and turn his head to one side, to keep the nose and mouth at a slight distance from the ground.

Kneel by one hip and face the patient's head, lay your palms on his back over the lowest ribs, so that the two thumbs nearly meet at the small of the back. Now bend forward and slowly apply firm, yet not excessive, pressure downwards on the hands; in this way an expiratory act is produced. Next move back your body to stop the pressure on your hands, but the latter are not removed from the patient's back. Do this more rapidly than the forward pressure. This tends to produce the inspiratory act.

These movements are done alternately about fifteen times a minute. Do not give in unless it is obviously useless to proceed further, or a doctor pronounces life to be extinct.

In this method there is no necessity to pull forward the tongue, nor to put a pad of any kind beneath the patient.

NOTE.—Artificial respiration is used to restore breathing in cases of drowning, strangulation, smothering, choking, hanging, inhalation of poisonous gases and smoke, or electric shock.

# APPENDIX

## THE EMERGENCY TREATMENT OF VARIOUS CONDITIONS

### DROWNING.

If only a short time has elapsed since the body was immersed in water, proceed as follows: Bring the unfortunate person ashore with the least possible loss of time. Loosen the clothing and get rid of the water and froth from the air-passages as quickly as you can by first removing any seaweed, etc., that may be in the mouth, and secondly placing the patient face downwards, with his forehead on his right forearm. A pad is inserted beneath the chest. Press the patient's back for three seconds with your hands on his lower ribs, then turn him on to his right side for three seconds, and move him on to his front again, and so on. Continue with these movements until the froth and liquid cease to come from the mouth. By this means artificial respiration may be restored; if not, do Silvester's or Schäfer's method.

When breathing is established (but not before), put dry clothing or warm blankets around him, a hot-water bottle to his feet, and afterwards let him have a warm drink. If it be possible, obtain medical aid at once.

## SMOTHERING.

Immediately remove the object which is smothering the person, and perform artificial respiration if it be required.

## STRANGULATION.

Undo or cut the rope, or whatever else it may be, and do artificial respiration.

## CHOKING.

Quickly force open the mouth, introduce the right forefinger, and endeavour to remove the substance from the throat. If not successful, bend his head forward and deliver a tolerable blow on the back. Should the patient vomit, the cause of the trouble will probably soon be removed. Artificial respiration may be required.

## HANGING.

Immediately support the body with the left shoulder and arm, and cut the rope with the right hand. Remove the rope from the neck, and do artificial respiration.

## SUFFOCATION.

Place a handkerchief (wet for preference) over your nose and mouth, tie at the back of the head, enter the building, and quickly remove the sufferer. Do artificial respiration; give an inhalation of oxygen, if available. Whilst the patient is being rescued, assistants should open every door and window.

## ELECTRIC SHOCK.

Beware lest you receive a severe electric shock from the patient. To prevent this you must take certain precautions before endeavouring to remove the sufferer from his unfortunate situation. Stand on *dry* wood, bricks, cloth, or straw, and wear rubber gloves or a rubber tobacco-pouch to protect the hands. A crooked walking-stick (not an umbrella) or a dry piece of wood may be useful to free the sufferer, if no rubber articles are *handy* to protect the hands. Do not touch any part of the patient except his clothing, and that only if dry.

Naturally, if it be possible to have the electricity turned off from the main, this should be done, but by a trained hand only.

When the sufferer is removed to safety, flick him on the chest and neck with a wet towel and do artificial respiration. Afterwards any burns due to electricity can be treated.

## FAINTING.

If the cause be fright, bad news, fear, anxiety, exhaustion, or want of food (and not hæmorrhage or serious injuries), act as follows: Loosen all tight clothing from the throat, chest, and abdomen; bring the patient into the open air, and *allow no crowd to stand around*, as fresh air is wanted. Place the patient on his back, and let the head be slightly below the level of the body. Smelling-salts applied to the nostrils may be sufficient; if not, give a teaspoonful, or less, of sal volatile, with one or two tablespoonfuls of cold water. Wrap a rug, blanket, or overcoat over the legs and stomach. Give a warm drink and food if the cause be hunger, also apply a hot-water bottle to the feet. Occasionally artificial respiration is required.

In the more serious faints the cause must be treated.

## CONCUSSION

This may be slight or very grave indeed. Slight concussion is not infrequent in children. After an interval of more or less unconsciousness, the little patient will probably vomit and be nearly himself again. More serious cases are for medical treatment, but until the arrival of aid keep the sufferer quiet and lying down, with the head slightly raised. Give nothing by the mouth. Even should the patient appear to get better, it is wise to keep him at rest until a doctor gives his opinion. The cause may vary from a slight blow or fall to a severe blow causing a fracture of the skull.

## INJURY TO THE HEAD.

If the person has received a blow on the head, and he be more or less stunned (even without the grave signs of blood from the nose, mouth, or ears), lay him flat down, raise the head above the rest of the body, keep him quiet, give nothing by the mouth, and send for a doctor.

## APOPLEXY.

As a rule this occurs in elderly people. It may come on very suddenly. There is more or less insensibility. The breathing is stertorous, and in expiration a flapping movement of the lips is made. One or more limbs may be powerless.

Lay the person down, with the head slightly raised. Place a blanket or rug over him. Nothing whatever is to be given by the mouth. Medical aid is required

## EPILEPSY.

The sufferer falls to the ground, and in so doing may hurt himself. He becomes blue in the face, and after a few seconds moves his arms in a clenched attitude. In a short time the attack is over, and he may be able to resume his work, or he might be more or less dazed. Sometimes a patient will suffer from one attack after the other. This condition is a very dangerous one for the sufferer. During the attack the sufferer is quite insensible. Every endeavour must be made to prevent him biting his tongue; therefore introduce between the back teeth a large knot on a handkerchief or some lint. Undo all tight clothing round the neck and chest. Raise the head slightly, and keep him quiet for a certain time after the attack is over.

## HYSTERICAL ATTACKS.

The subject is always a female, and generally apt to be neurotic and excitable. She falls down (without hurting herself), moves her arms wildly about, and screams. She will not bite her tongue. (The subjects of epilepsy never scream out during an attack.) The attack may last for many minutes, or even an hour, if not checked.

Throw some cold water on the face and neck, and be firm with her (if sure that it is only hysteria). She will then soon recover.

## PEAS AND STONES IN THE EAR.

Depress the head on the affected side, and give a sharp (but not too hard) tap over the other ear with the flat of the hand. This often will be found sufficient to remove the pea or stone. If not, on no account try to take it out, nor should it be syringed. Take the patient to a doctor.

## INSECT IN THE EYE.

The usual offender is a small fly. Direct the person not to rub his eye; bring him to a good light, and take the fly out with a clean handkerchief. Depress the lower lid with the thumb of the left hand, wrap a part of the handkerchief around the right forefinger, and gently remove the fly with a slight gliding movement. If it be under the upper lid, raise up the lid with the left thumb, and remove as above. Afterwards bathe the eye with cold water.

## QUICKLIME IN THE EYE.

Immediately brush away as much of the quicklime as you can with a handkerchief; wash out the rest of it by means of a mixture of vinegar and water (about 1 to 5). Then carefully pull down the lower lid and drop in some olive, but not castor, oil. The eye must not be rubbed.

## BITES OF SNAKES AND DOGS.

Quickly tie a handkerchief or bandage as tightly as possible around the limb on the side of the wound which is nearer to the heart. This prevents the poison from getting into the circulation. Suck out as much of the poison as you can, but spit it out again instantly, as not a drop of it should be swallowed. Wash out your mouth with water or a solution of permanganate of potash, if at hand. Encourage bleeding from the part, as it is beneficial, and apply a solution of carbolic acid, eucalyptus, or other antiseptic, to the wound with a dressing, and bandage.

Obtain medical aid. Do not hesitate to give brandy or sal volatile and water if his condition grows rapidly serious.

In the case of a bite from a mad dog, act as above; but the patient needs further treatment at the Pasteur Institute for Hydrophobia.

## STINGS OF INSECTS AND PLANTS.

Take out the sting (if there be one), and bathe the part with a mixture of ammonia and water, brandy, or bicarbonate of soda. Internally, brandy or sal volatile and water can be administered.

## FROST-BITE.

The sufferer must on no account be brought into a warm room until the circulation of the affected part has been restored by rubbing it with your hand. The circulation of the part being again established, he can enter a warm, but not a hot, room.

## FISH-HOOK EXTRACTION.

Cut off the pointed end of the hook with a file or cutting pliers, and pull the remainder backwards from the skin. If the point be not quite through the skin, push it right through, and then proceed as above.

## BURNS AND SCALDS.

A burn is caused by dry heat or a corrosive fluid, and a scald by a boiling liquid, such as water.

Apply to the burn—on a dressing for preference—either zinc or boric ointment, lanoline, vaseline, olive oil, lard, or butter. The point is to keep out the air. Use boric, not zinc, ointment for the face. When shock is present, as it often happens with children, put the sufferer to bed, with warm bottles (covered with flannel) to the feet, and give warm drinks.

All burns and scalds are very serious in the case of children, so medical advice is urgently needed.

A scalded and swollen throat from drinking boiling water is a calamity that occasionally happens to children. It should be treated by applying a hot fomentation to the front of the neck, giving a teaspoonful of olive oil to drink, and followed by frequent sips of cold water. Place the child in a hot, dry atmosphere—*i.e.*, 4 or 5 feet from a fire.

If a woman's dress is on fire, act as follows: Lay the woman at once flat upon the ground. When the front of her dress is alight, place her upon her back, and when the back is alight, upon her front. The reason is obvious. Smother the flames with a blanket, rug, cloak, or whatever is at hand, taking care not to let your own clothes catch fire. Naturally a wet blanket would be more efficacious than a dry one. Should your own clothes be on fire, lay down and put them out as best you can and call for help.

## POISONING.

Take a quick glance round the room or vicinity, to endeavour to detect a bottle denoting the poison which has been swallowed. Throw nothing whatsoever away. Look at the patient intently, and go close to him to look for stains or burning of the mouth, or stains upon his clothes (so frequent in acid poisoning). The breath is important to those at all familiar with the odour of alcohol, opium, etc. Drowsiness may be of great importance; also the state of the pupil, which is dilated in belladonna, and contracted in opium, poisoning.

Generally speaking, the symptoms of poisoning come on suddenly and rapidly progress, the person poisoned being in good health when the symptoms began.

The principles of treatment are: Neutralize and dilute the poison; give an emetic to get rid of the poison; protect the injured internal surfaces by giving olive oil, barley-water, white of egg, or such-like; and look after the sufferer's general condition.

Vomiting can be effected by a teaspoonful dose of ipecacuanha wine every twenty minutes until vomiting occurs, or by a teaspoonful of mustard or a tablespoonful of salt to half a tumbler of water. But no person must be made to vomit who has a stain or burn upon his lips, lest the stomach be made to rupture

Acids, such as oil of vitriol, spirits of salts, etc., are neutralized by alkalis (as bicarbonate of soda or fluid magnesia); no emetic is given, but olive oil can be administered. Alkalis, such as caustic potash or soda, are neutralized by an acid (such as vinegar); no emetic is given, but olive oil is administered.

For carbolic acid Epsom salts dissolved in milk or olive oil is useful and generally handy.

If the poison be opium, keep the patient awake by walking him about or slapping the face with a wet towel; give an emetic and strong coffee.

Give an emetic also for arsenical, strychnine, phosphorus, tartar emetic, belladonna, alcoholic, and ptomaine poisoning, but no olive oil in phosphorus poisoning.

Obtain medical aid immediately.